

## REMARKS

Upon entry of this amendment, claims 1-4 and 6-15 will be pending. Claim 1 and 6 have been amended and claim 5 has been canceled. Applicants have amended claim 1 to provide proper antecedent basis for the term "the fluid" appearing in the claim. No new matter has been added. Claim 6 has been amended to remove "an inlet" because an inlet is already cited in claim 1, from which claim 6 depends.

Applicants have amended the specification to correct the informalities noted in the Office Action. Applicants have also amended the paragraph beginning on page 17, line 4, of the specification in response to the Office Action's objections to the curves shown in Figure 12. The essential point that the reader is intended to take away from Figure 12 is the detectable shift in the first resonance peak. The designation of the two curves in Figure 12 is not necessary to understand this point. Accordingly, the objection to Figure 12 is believed to be moot in view of Applicants amendment to the paragraph beginning on page 17, line 4, of the specification.

### I. The Claimed Inventions Are Not Obvious

#### A. Claims 1, 2, 4-9, 11, 12, 14, and 15

Claims 1, 2, 4-9, 11, 12, 14, and 15 stand rejected under 35 U.S.C. § 103(a) for alleged obviousness over U.S. Pat. No. 5,101,163 (the "Agar reference") in view of U.S. Pat. No. 5,280,727 (the "Hafner reference"). Applicants traverse the rejection and request reconsideration because the cited references are from different fields, and there is no evidence of record indicating that those of ordinary skill would have been motivated to combine them, much less to combine them in a manner that would have produced a claimed invention.

Patent claims cannot be found obvious in view of a combination of references unless the prior art itself suggests the desirability of the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 221 U.S.P.Q. 929 (Fed. Cir. 1984); *Berghauser v. Dann*, 204 U.S.P.Q. 393 (D.D.C. 1979). "A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field." *In re Kotzab*, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000). To establish a

*prima facie* case of obviousness, “there must be some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant.” *In re Dance*, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). “In other words, the examiner must show reasons that the skilled artisan, confronted with the same problem as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.” *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998).

The Agar reference discloses a device for measuring the concentration of a fluid comprising two substances (i.e. oil and water). The concentrations are determined by measuring the transmission of electromagnetic waves (Abstract, lines 1-3). The device utilizes a transmission element and at least two receivers (Abstract, lines 3-7). The dielectric properties of the fluid are analyzed by measuring the difference or ratio of the two signals received by the receivers (column 2, lines 30- 36). The difference or ratio of the two signals can be used to determine the concentrations of substances in the fluid (Abstract, lines 8-11).

In contrast, the Hafner reference is not concerned with determining dielectric properties of a fluid. Rather, the Hafner reference simply discloses a flow meter in which fluid velocity is measured based upon what is commonly referred to as the Hall effect, wherein a voltage related to the flow velocity is induced in the fluid as it passes through a magnetic field. See column 1, lines 14-27.

The physical principles involved and the associated electronics of the devices disclosed by the Agar and Hafner references are wholly different. There is no reason why one skilled in the art attempting to improve the accuracy of devices for determining dielectric properties of conductive fluids would have referred to the Hafner reference. The Office Action alleges that the motivation to transplant the construction disclosed in the Hafner reference for use in the device disclosed by the Agar device would have been to protect the conductive boundary from damage if the fluid used in the Agar device was corrosive (page 4, second paragraph). However, neither the Agar reference nor Applicants’ claimed inventions concern the protection of a conductive boundary. Accordingly, the Office Action fails to show why a skilled artisan, confronted with the same problem as the Applicants and with no knowledge of the claimed invention, would select elements from the Agar and Hafner

references for combination in the manner claimed. *See Rouffet*, 47 USPQ2d at 1458. Moreover, even if one skilled in the art was concerned with protecting the Agar device from corrosion, there is no evidence that one skilled in the art would have considered an electrically insulating material over other corrosion resistant materials.

Since the Office Action fails to make out a *prima facie* case of obviousness for independent claims 1 and 14, the rejection of dependent claims 2, 4-9, 11, 12, 14, and 15 should be withdrawn. Nevertheless, Applicants wish to point out additional differences between Applicants' claimed inventions and the cited references. In reference to claim 2, for example, the Office Action points to column 3, lines 46-48, of the Agar reference which mentions *transmitting ... a signal within a predetermined frequency band*. This language is not equivalent to saying that the transmitter is "adapted to operate at a range of frequencies", as recited by Applicants in claim 2. Simply put, specifying a transmitter that can transmit within a predetermined frequency band is not the same as specifying a transmitter that is adapted to operate at a range of frequencies. The former, of course, could be met by a transmitter that is capable of producing only one frequency, provided that the frequency was within the predetermined band.

With reference to claim 8, the Office Action points to column 2, lines 30-36, of the Agar reference. This passage refers to *measuring the ratio and/or the phase difference of the powers received by each receiver*. Measuring the power ratio between two different receivers is not in any sense equivalent to "measuring the voltage standing wave ratio" as recited in claim 8.

In reference to Applicants' claim 12, the Office Action refers to column 4, lines 45-47, of the Agar reference which specifies that *a linearizing means comprises a look up table*. The Office Action fails to explain how a linearizing means comprising a look up table can be considered equivalent to the calculating means recited in claim 12.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness for claims 1, 2, 4-9, 11, 12, 14, and 15. The cited references are from different fields and there is no evidence of record indicating that those of ordinary skill would have been motivated to combine them, much less to combine them in a manner that would have produced a claimed invention. Applicants respectfully request that the rejection be withdrawn.

**B. Claims 3 and 10**

Claims 3 and 10 stand rejected under 35 U.S.C. § 103(a) for alleged obviousness over the Agar reference in view of the Hafner reference and further in view of U.S. Pat. No. 5,754,055 (the "McAdoo reference"). The rejection of claims 3 and 10 is improper for all the reasons that claim 1 is not obvious. The Office Action fails to provide any evidence indicating that those of ordinary skill would have been motivated to combine either the Agar or McAdoo references with the Hafner reference, much less to combine them in a manner that would have produced a claimed invention. Accordingly, the Office Action fails to make out a *prima facie* case of obviousness for claims 3 and 10. Applicants respectfully request that the rejection be withdrawn.

**C. Claim 13**

Claims 13 stands rejected under 35 U.S.C. § 103(a) for alleged obviousness over the Agar reference in view of the Hafner reference and further in view of U.S. Pat. No. 5,793,216 (the "Constant reference"). The rejection of claim 13 is improper for all the reasons that claim 1 is not obvious. The Office Action fails to provide any evidence indicating that those of ordinary skill would have been motivated to combine the Agar, Constant, or Hafner references, much less to combine them in a manner that would have produced a claimed invention. Accordingly, the Office Action fails to make out a *prima facie* case of obviousness for claim 13. Applicants respectfully request that the rejection be withdrawn.


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**PATENT**

## **II. Conclusion**

In view of the foregoing, Applicants respectfully submit that the claims are in condition for allowance. An early notice of the same is earnestly solicited. The Examiner is invited to contact Applicants' undersigned representative at (215) 557-5963 if there are any questions regarding Applicants' claimed inventions.

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